

Bellwork: 4/3/13

Find the LCD for the two expressions listed below:

1) $2x^2 + 12x$ $\frac{2x(x+6)}{(x+6)(x-6)}$ LCD = $2x(x+6)(x-6)$
 $x^2 - 36$

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Algebra 2

Section 8.4 - Part 2

ADDITION AND SUBTRACTION
WITH RATIONAL EXPRESSIONS

Rational expressions can be added if they have a common denominator.
Therefore, we find the least common denominator and then rewrite each rational expression as an equivalent rational expression with that denominator.

Example 1: $\frac{5a}{a^2 + a - 6} + \frac{2a}{a^2 - 4a + 4}$

- First factor each denominator into its prime factors.

$(a+3)(a-2)(a-2)(a-2)$

- The least common multiple of $a^2 + a - 6$ and $a^2 - 4a + 4$ is ...

LCD: $(a-2)(a+3)(a-2)$

- Next, simplify by carrying out the indicated multiplications in the numerators and simplifying

$\frac{5a(a-2)}{(a+3)(a-2)(a-2)} + \frac{2a(a+3)}{(a-2)(a-2)(a+3)}$

- Be sure to note any necessary restrictions - remember the denominator can never equal zero.

$\frac{5a^2 - 10a + 2a^2 + 6a}{(a+3)(a-2)(a-2)} - \frac{7a^2 - 4a}{(a+3)(a-2)(a-2)}$

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Example 2: $\frac{2}{x^2 - 5x + 6} - \frac{2x}{x^2 - 4}$ LCD: $(x-2)(x-3)(x+2)$

$(x-3)\cancel{(x-2)}\{(x-2)(x+2)\}$

$$\frac{2(x+2)}{(x-3)\cancel{(x-2)}(x+2)} - \frac{2x(x-3)}{(x-2)\cancel{(x+2)}(x-3)}$$

$$\frac{2x+4}{(x-3)(x-2)(x+2)} - \frac{\cancel{2x^2} + 6x}{(x-3)(x-2)(x+2)} = \boxed{\frac{-2x^2 + 8x + 4}{(x-3)(x-2)(x+2)}}$$

